



Carbon Save

Greening the UK housing stock
to save energy and money



WILLMOTT DIXON



the challenge



"The UK's Low Carbon Strategy is totally dependent on successfully retrofitting our existing housing stock. Willmott Dixon will be playing a major role in that transition, delivering innovative and cost-effective ways of making housing more energy efficient. This is a critical part of our overall commitment to putting sustainability at the heart of everything we do."

Jonathon Porritt,
Founder Director of Forum for the Future, former chair
of the UK Sustainable Development Commission,
and Non-Executive Director of Willmott Dixon.



Together, social housing providers and their partners can take a lead in making every neighbourhood greener. At Willmott Dixon we believe in a holistic approach to ensure every home can be made as environmentally and economically efficient as possible. We are keen to work hand-in-hand with social landlords to explore the best ways to make all of our homes fit for the future.

Homes in the UK currently emit
41 million tonnes of CO₂ a year

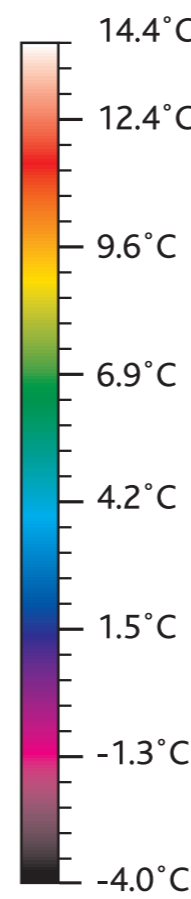
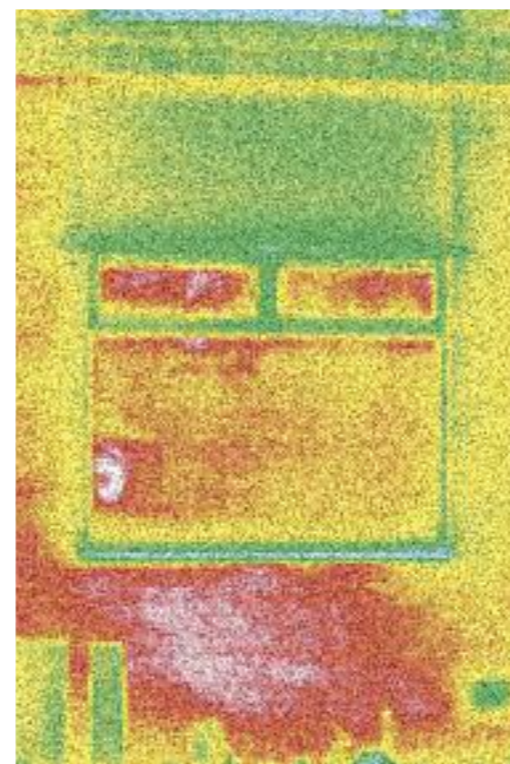
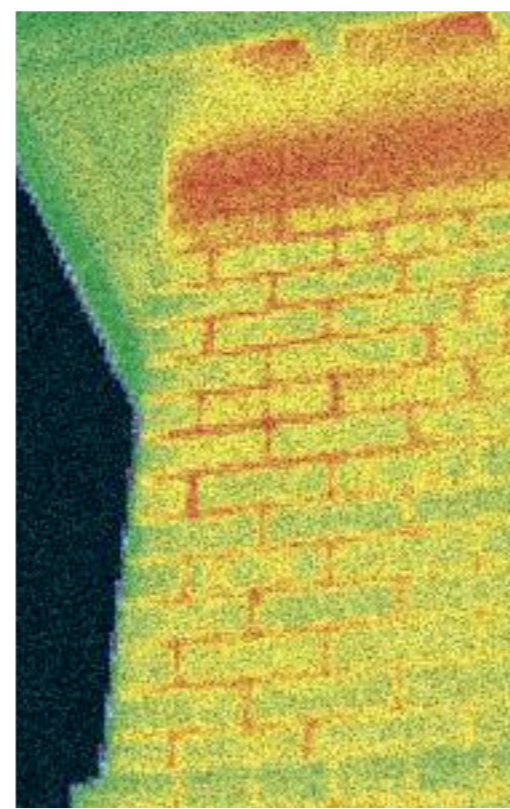
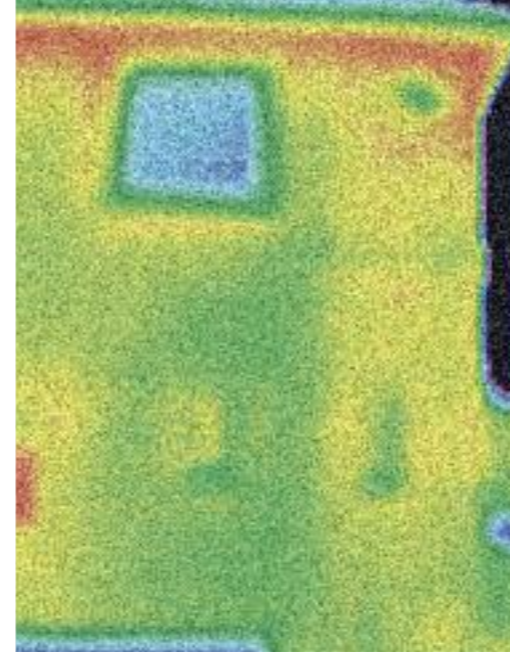
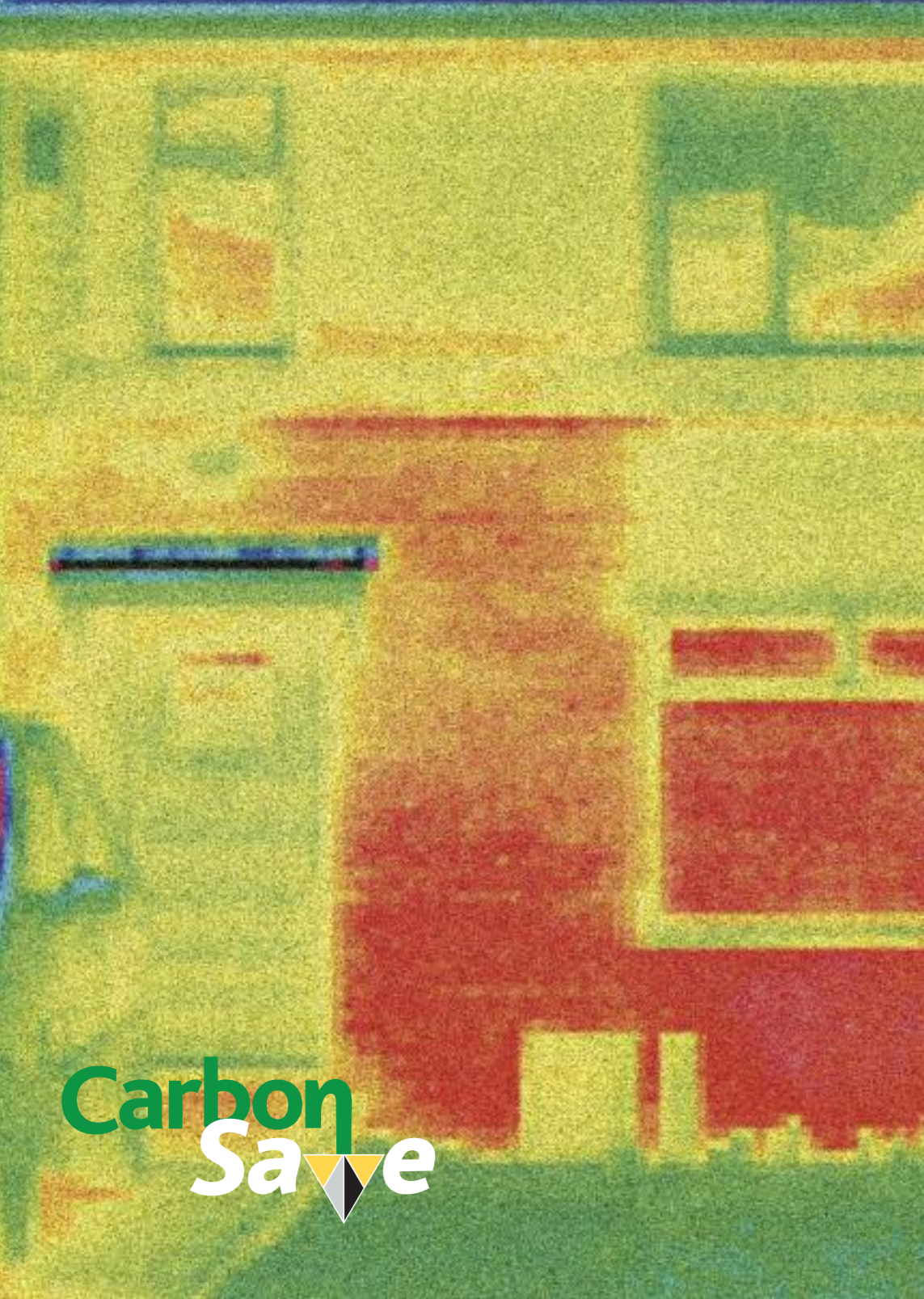
By 2020
we need to
reduce CO₂
emissions from homes
by 29%*

7 million
'whole house'
eco-upgrades
will be required*

*Warm Homes, Greener Homes:
A Strategy for Household Energy
Management, HMG, March 2010.



▼
Homes account for
27% of all of the
UK's carbon emissions



understanding the issues

The Government has pledged to cut greenhouse gas emissions by 80 per cent by 2050. Greening our housing stock will be essential if we are to hit these ambitious targets. Substantial progress has been made in building new eco-friendly homes. But we now need to step up a gear in tackling our existing homes as 70% of today's homes will still exist in 2050.

The scale of the challenge is huge.

Understanding the problem is the first step. The thermographic images (left) show examples of how inefficient current UK housing can be. The red shows the most thermally inefficient areas of the building. Using technologies such as thermographic imaging, Willmott Dixon is able to identify and take action to prevent the root causes of heat loss.

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Retrofit to create a
warmer,
healthier environment

Carbon
Save

improving lives



Environmental improvements to existing homes will make a real difference to people's lives. Creating warmer, better ventilated homes means a reduction in energy bills and a better standard of living for residents and tenants.

These types of retrofit approaches can make a huge impact on fuel poverty for those with low incomes and the elderly.

Our Barnsley 'Eco-makeover' is a good example of how we have improved the lives of one family.

It was a typical 1930s semi: chilly and leaky with sky-high fuel bills. Now this Berneslai Homes property has been transformed,

thanks to a major 'whole house' eco-makeover by Willmott Dixon Partnerships.

The house now features a solar thermal heating system, a new ventilation and heat recovery system and water efficient taps and WC. It has been fully insulated and double glazed, and has a modern condensing boiler which kicks in to support the output from the solar panels

on cloudy days. The project even involved creating a home working space.

Tenants Sarah West and Ian Heppleston can look forward to a big reduction in their heating bills, as well as a much warmer and healthier environment for their three children.

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“When we were informed about the work, we were sold on the idea. We have been told it will shave nearly half from our heating bills which will make a big difference. The house is also much warmer.”

Sarah West, Resident



in-house expertise

Willmott Dixon brings to retrofit projects a strong track record. Our extensive experience in both the new build and maintenance sectors has equipped us with the right skills for the job. We understand the demands of managing and improving existing housing stock. Our expertise is now applied to the retrofit market to give our customers best value solutions.

Our in-house sustainability and innovation consultancy, Re-Thinking, can work with you to measure the environmental performance of your existing stock.

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“Identifying the most affordable, replicable and sustainable solutions to meet customers and end users needs is our core skill.”
Brendan Ritchie, Managing Director, Re-Thinking



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Re-Thinking has expertise in energy assessments and modelling on domestic and non-domestic buildings. Using approved analysis tools we provide 'best-value' solutions to meet your energy and CO₂ reduction targets. Beyond the recognised UK methodologies we have a sector leading capability in PassivHaus approaches with a number of accredited assessors.

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Energy assessors carry out site visits or work from existing plans for the base analysis. From this 'baseline' energy assessment we model a range of 'what-if' scenarios to achieve a 'best-value', integrated suite of interventions. Our experienced, qualified assessors work with all the appropriate BREEAM¹ standards and are accredited to produce both EPC² and DEC³ certificates.

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We have experience of using products, materials and working practices that contribute to CO₂ reductions, for new and existing homes. Re-Thinking also carries out research and development, to identify innovative approaches to retrofit.

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We understand the challenge of funding retrofit initiatives and are working with some of the key funding providers, including energy suppliers, to help deliver funding solutions for the future.

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We ensure that we deliver in a professional manner to the right timescales for our customers. We offer the right level of support to residents to promote lifestyle changes that maximise energy reduction and result in lower running costs.

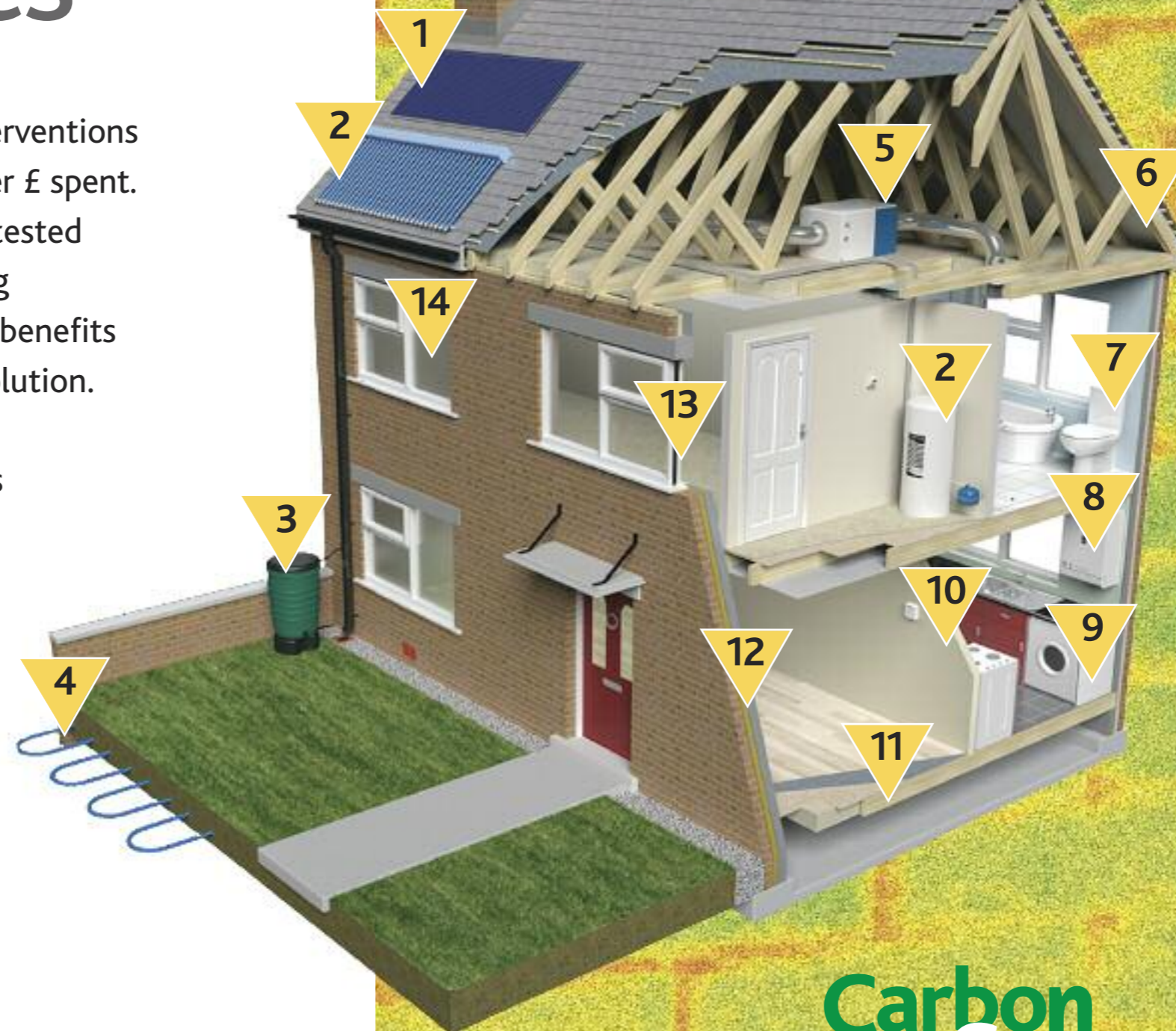
- 1. British Research Establishment Environmental Assessment Methodology
- 2. Energy Performance Certificates for domestic buildings
- 3. Display Energy Certificates for non-domestic buildings

retrofit measures

Getting the right mix of interventions maximises CO₂ reduction per £ spent. A combination of tried and tested products and market-leading innovations deliver tangible benefits in a 'whole house' retrofit solution.

The diagram opposite shows some of the measures that can be utilised to reduce carbon emissions and improve the environmental performance of a home.

Installing solar water heating panels can provide up to 60% of your heating and hot water needs.



A 'whole house' retrofit solution

Measures include:

- 1 Photovoltaics – solar electricity
- 2 Solar water heating
- 3 Water butts for rainwater recycling
- 4 Ground source heat pump (or air source heat pump)
- 5 Mechanical ventilation and heat recovery
- 6 Deep loft insulation
- 7 Low flush toilet and low flow taps
- 8 Boiler replacement
- 9 Upgrading kitchen appliances
- 10 Smart meters and home energy management systems
- 11 Insulating suspended timber floors
- 12 Cavity or solid wall insulation
- 13 Reduced air leakage
- 14 Double and triple glazing

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Behavioural change can
reduce carbon emissions
by as much as **20%**
Energy Saving Trust

people matter

Implementing a best-value range of physical interventions is of course the first step towards improving the environmental performance of existing homes. But, the way residents use their homes can have a significant effect on the energy reductions actually achieved.

Awareness and understanding of how the home behaves as a system is essential if the theoretical CO₂ reductions are to be achieved in reality.



That is why Willmott Dixon is rolling-out training programmes, to all our staff and our supply chain so that every time they meet one of your residents, they will be qualified to help them understand how their home can be operated as efficiently as possible.

At Willmott Dixon we appreciate that promoting behavioural change can really yield results. We believe that innovation has a part to play and have been trialling a Home Energy Management System that has occupancy settings to allow users to tell the heating system when they are out of their home or asleep to save energy and money.



Measures that we promote to the end user include the following behavioural changes that have been proven to save both energy and money:

- ▼ Turn the thermostat down by 1°C
- ▼ Only boil as much water as you need
- ▼ Draw curtains at night to retain heat
- ▼ Wash full loads of laundry; at 30°C
- ▼ Always turn lights off when you leave the room
- ▼ Turn appliances off; avoid standby
- ▼ Programme your boiler properly
- ▼ Adjust the heating rather than open windows
- ▼ Use energy saving light bulbs



our credentials

The measures being put forward as retrofit solutions are not new to Willmott Dixon. Our extensive experience in the new build and maintenance sectors gives us a deep knowledge of building to high environmental standards. Understanding the detail and learning from experience helps us to continually improve. That's why we are working with the Technology Strategy Board on the 'Retrofit for the Future' programme.

Facing tomorrow's challenges today.

Bringing today's homes up to the standards of 2050 is what Places for People and Willmott Dixon Housing are doing with their project under the Retrofit for the Future programme. This Technology Strategy Board sponsored project will achieve an 80% saving in carbon emissions for a mid-terrace home in Aylesbury, Bucks.

The project will tackle the fabric of the building, heating, hot water, ventilation and lighting as well as fitting an innovative solar water heating system. The partners are focussing on a mainstream 'whole house' solution to the carbon reduction challenge, which can then be rolled out nationwide. This experience will be invaluable to understanding the scope and implementation of retrofit measures for the future.

“You can theorise for years but until you start, you don't know what the subtleties and complexities are. The Technology Strategy Board project is a genuine attempt to see what works and what doesn't. One of the challenges was to try and find something we could practically apply elsewhere. We couldn't do it without our contractor partners and we wouldn't want to.”

*Nicholas Doyle, Project Director,
Places for People*



Willmott Dixon now carry out
a responsive repairs service
to over 100,000 homes
in the UK





WILLMOTT DIXON



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vegetable based
inks onto
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